

## REMARKS

This is in response to the *fourth* Notice of Non-Responsive Amendment mailed May 2, 2007. As explained below, Applicants believe that each of the papers previously filed were fully responsive. In the following paragraphs, Applicants address the points raised by the Examiner and provide a detailed analysis of why the designated species is within the scope of the elected claims.

In making the allegation of non-responsiveness, the Examiner appears to improperly consider only the “DNA” designation of PNA3 (at line 212 in the electronic sequence submission of May 20, 2006) and ignores the fact (as clearly shown in, for example, the specification) that PNA3 has a structure that differs from DNA. The name **PNA3** itself indicates that the compound is a **PNA**, not a **DNA**. This distinction is further indicated, for example, at: page 20, line 1 to page 21, line 4 (which describes PNA3 as a PNA containing the bases T and C); page 20 lines 3-5 (which describes the effect of benzoylated cytosine on peptide nucleic acids); Table 1 (which includes PNA3 and describes the binding properties of PNAs); and page 21, line 1 (which uses the term “nucleic acid mimic”, not DNA, when describing PNA3).

The Examiner’s reliance upon the “DNA” designation in the May 20, 2006 submission is also improper because none of the designations that were available to Applicants accurately describe PNAs.<sup>1</sup> It would be disingenuous for the PTO to force Applicants to choose among an inapplicable list of designations, and then later use Applicants’ choice to argue that the disclosed compounds have a structure that is different from what the specification clearly shows.

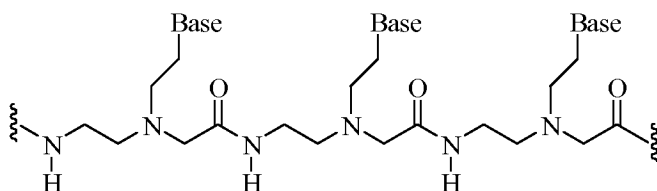
That PNA3 is a PNA, not a DNA, is critical to understanding the fact that PNA3 falls

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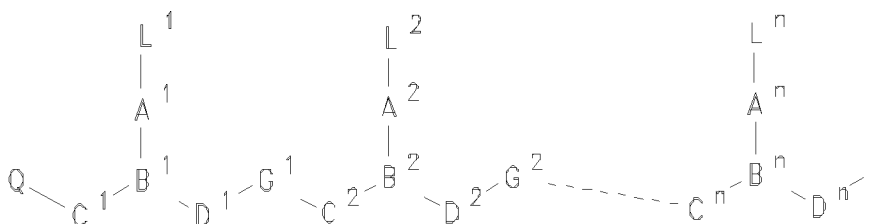
<sup>1</sup> An Applicant has but three choices for this mandatory field: DNA, RNA or amino acid - nothing else. Importantly, an Applicant is forced to use one of these choices in order to complete the electronic sequence listings. To use this mandatory choice to construct a virtual compound that is not Applicant's compound and base the examination on that virtual compound would unfairly penalize an Applicant for having made their best effort to comply with the sequence listing requirement.

within the scope of claim 22. By using an incorrect interpretation that PNA3 is a DNA molecule, the Examiner alleges that the 10-mer PNA3 has 10 bases but reads on a composition, even with a terminal Lys residue, having  $n=1$ . As discussed above, however, PNAs such as PNA3 are well known to have a backbone of N-(2-aminoethyl)-glycine residues. The basic

PNA structure is as follows.



The structure recited in Claim 22 is as follows.



Formula I

In claim 22,  $n$  is at least 2. In order to obtain the PNA structure shown above (and the elected species PNA3), the following selections would be made from the choices available in claim 22:  $G$  is  $-NHC(=O)-$ ,  $C$  is  $CH_2$ ,  $D$  is  $(CH_2)_2$ ,  $A$  is  $-C(O)CH_2-$ , and  $L$  is the appropriate base.

One key to understanding that the structure represents multiple amino acid residues is consideration of variable " $G$ ". " $G$ " is  $-NHC(=O)-$  in the elected species. Each base resides between two " $G$ " groups or a " $G$ " group and either a " $Q$ " or " $I$ " group. On one side of the base, the " $NH$ " portion represents the amino end of the amino acid. On the other side of the base, the " $CO$ " portion represents the acid end of the amino acid. Even ignoring  $Q$  and  $I$ ,  $n$  is at least 8 for the 10-mer

PNA3, because 8 bases reside between two G groups.<sup>2</sup> This satisfies the criteria of n being at least 2.

Thus, Applicants reassert the designation of PNA3 (whose base sequence is described in Seq. ID No. 5) as the designated species to assist with the initial examination. Further, Applicants request entry of the amendments submitted with our October 12, 2007 response and substantive examination of the pending claims.

Applicants believe that this response, as well as our previous responses, are fully responsive. If the Examiner has any questions, he is invited to contact the undersigned.

Date: June 1, 2007

Respectfully submitted,

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<sup>2</sup> "Q" can be selected to be CO<sub>2</sub>H and "I" can be selected as an amine group. Taking these groups into consideration, n is 10 for PNA3.